In the Claims

1. (Previously Presented) A probe for acquiring data in magnetic resonance (MR) imaging, the probe comprising:

a self-expanding housing insertable into a subject to be imaged and constructed to permit fluid flow therethrough;

a plurality RF coils attached to the housing; and

wherein a gap formed between the plurality of RF coils and the housing is configured to increase RF sensitivity away from the probe.

2. (Original) The probe of claim 1 further comprising a tracking coil configured to actively track probe movement during MR imaging.

3. (Original) The probe of claim 2 wherein the tracking coil is further configured to transmit tracking signals for gating data acquisition.

4. (Original) The probe of claim 1 wherein the probe is constructed to be insertable into a vascular system of the subject to be imaged.

5. (Original) The probe of claim 1 further comprising at least one tuning capacitor connected to the plurality RF coils, the at least one tuning capacitor configured to tune the plurality RF coils.

6. (Original) The probe of claim 1 further comprising a shaft connected to the housing and constructed to position the housing within the subject to be imaged.

7. (Original) The probe of claim 6 further comprising a retractable sheath constructed to enclose the housing during insertion into the subject and translation to a target tissue to be imaged and further constructed to be retracted by a user to allow the housing to expand when proximity to the target tissue is reached.

8. (Original) The probe of claim 7 wherein the sheath is formed of a material that applies a compression force upon the housing and the plurality RF coils during insertion into the

subject and translation to the target tissue to be imaged, and wherein the housing is constructed of material to automatically expand the plurality RF coils when the compression force is removed.

9. (Original) The probe of claim 7 wherein the sheath has a shaft length that exceeds a distance from an insertion point to the target tissue to be imaged.

10. (Original) The probe of claim 1 wherein the housing comprises a first pair of bars and a second pair of bars for attaching the plurality RF coils thereto.

11. (Original) The probe of claim 10 wherein the plurality RF coils comprises a first RF coil connected to the first pair of bars and a second RF coil connected to the second pair of bars.

12. (Original) The probe of claim 11 wherein the first pair of bars is located in a first plane and the second pair of bars is located in a second plane.

13. (Original) The probe of claim 12 wherein the first and second planes are perpendicular to each other.

14. (Original) The probe of claim 1 wherein the housing is constructed of nitinol.

15. (Previously Presented) The probe of claim 1 wherein the gap is filled with an insulating dielectric material.

16. (Original) The probe of claim 1 incorporated into an MR imaging system and wherein the fluid flow includes a blood flow.

17. (Previously Presented) An MRI apparatus comprising:

a magnetic resonance imaging (MRI) system having a plurality of gradient coils positioned about a bore of a magnet to impress a polarizing magnetic field and an RF transceiver system and an RF switch controlled by a pulse module to transmit RF signals to an RF coil assembly to acquire MR images, the RF coil assembly comprising:

an intra-cardiac catheter configured for insertion into a blood flow and constructed to automatically expand to an expanded position from a compressed position;

a plurality of RF coils connected to the catheter and configured to acquire MR data;

a tracking coil connected to the catheter and configured to indicate RF coil assembly location and movement within an imaging subject;

wherein the tracking coil is configured to transmit signals indicating the location and movement of the RF coil assembly to the MRI system to facilitate MR data acquisition gating; and

wherein the MRI system is configured to gate MR data acquisition during imaging based on the location and movement of the RF coil assembly.

18. (Canceled)

19. (Original) The MRI apparatus of claim 17 wherein the catheter expands to substantially match an inner diameter of a target tissue in which the probe is placed.

20. (Original) The MRI apparatus of claim 17 wherein fluid flow vectors pass through the catheter.

21. (Original) The MRI apparatus of claim 17 wherein the plurality of RF coils includes a first RF coil and a second RF coil.

22. (Original) The MRI apparatus of claim 21 wherein the catheter includes a first set of bars attached to the first RF coil and a second set of bars attached to the second RF coil.

23. (Original) The MRI apparatus of claim 17 further comprising a sheath configured to receive the RF coil assembly therein for insertion into an imaging subject.

24. (Original) The MRI apparatus of claim 23 wherein the catheter is configured to auto-expand upon sheath retraction from the RF coil assembly.

25. (Original) The MRI apparatus of claim 24 wherein the catheter is constructed of a memory-type material.

26. (Previously Presented) A method of using an MR imaging device, the method comprising:

inserting an intra-cardiac MR imaging device into a sheath configured for insertion into an imaging subject to be scanned, the imaging device comprising an MR tracking coil and comprising a pair of RF coils attached to an auto-expandable former;

positioning the imaging device within the imaging subject to be scanned;

retracting the sheath to allow the former to automatically expand the pair of RF coils to an expanded position

acquiring tracking data from the MR tracking coil representing position and movement of the imaging device during imaging; and

gating data acquisition during imaging based on the tracking data to reduce imaging artifacts.

27. (Original) The method of claim 26 wherein the former is constructed to allow fluid subflow passage therethrough.

28. (Original) The method of claim 26 further comprising actively tracking movement of the imaging device during image scanning to monitor movement of the imaging device.

29. (Canceled)

30. (Original) The method of claim 26 further comprising the step of receiving tracking feedback from the tracking coil with the auto-expandable former compressed within the sheath while navigating to a target anatomy.